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STELLARIA UNIFLORA Walt.; FIG. 1, TYPE, × ½; FIG. 2, portion of TYPE, × 2; FIG. 3, ARENARIA BREVIFOLIA Nutt., plant, × 1, from Pine Mountain, Georgia, *Perry & Myers* in Pl. Exsicc. Gray., no. 546, not *A. uniflora* Luce (1823).

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STUDIES OF AMERICAN TYPES IN BRITISH HERBARIA

M. L. Fernald and Bernice G. Schubert

(*Continued from page 176*)

Part III. A Few of Philip Miller's Species

Pinus palustris Mill. Gard. Dict. ed. 8, no. 14 (1768).—Miller's description of *Pinus palustris* was very brief and rather inconclusive:

> 14. Pinus (*Palustris*) foliis ternis longissimis. *Pine-tree with the longest leaves growing by threes out of each sheath.* Pinus Americana palustris trifolia, foliis longissimis. Du Hamel. *Three-leaved, Marsh, American Pine with the longest leaves.*

Then, after discussing at length the propagation of pines, Miller continued:

> The fourteenth sort grows naturally on swamps in many parts of North America, where I have been informed they grow to the height of twenty-five or thirty feet. Their leaves are a foot or more in length, growing in tufts at the end of the branches, so have a singular appearance, but I have not heard the wood was of any use but for fuel; and there are few places here where these plants do well, for in very severe frosts their leading shoots are often killed, and in dry ground they will not thrive; so that unless the soil is adapted for them, it is to little purpose planting them.

Miller's *Pinus palustris* followed five other North American species, three of them with 3-leaved fascicles: *P. rigida* (leaves "3′–5′ long", *Sargent*, Man.); *P. Taeda* (leaves "6′–9′ long", *Sargent*) and *P. echinata* (leaves "3′–5′ long", *Sargent*) and

"longissimis" was evidently in comparison with these, unless borrowed from Du Hamel, although Miller's supplementary account of "leaves . . . a foot or more in length" was perhaps hearsay but must be taken into account.

Du Hamel, quoted by Miller, had simply

> 18. PINUS *Americana palustris trifolia, foliis longissimis.* Pin de marais à trois feuilles très-longues.[1]

Du Hamel had life-size plates of six species (not including his no. 18), these with leaves from 1–5 inches long. His "*longissimis*", then, meant more than 5 inches.

Although it is somewhat customary to treat as *Pinus palustris* Mill. the Long-leaf or Georgia Pine, Michaux filius, who surely knew our commoner trees, refused to take it up and named Long-leaf Pine *P. australis* Michx. f. Hist. Arb. Am. i. 64, pl. 6 (1810). It certainly is most doubtful if Miller (or Du Hamel before him) had *Pinus australis* growing in England or France. This tree is an inhabitant of sandy barrens or dry to dryish pine-barren or, extending locally back to the outer Piedmont, of dry crests or slopes of granitic or other siliceous rock: "C'est à peu de distance de Norfolk, dans la basse Virginie, où commencent les landes americanes, *Pine Barrens*, que le *Pinus australis* commence aussi à se montrer" (Michx. f., l. c. 65).

> "The name originally imposed on this species is unfortunate, as it produces a false impression, and has been the source of error to foreigners, if not to our own countrymen. If an inhabitant of the Southern States, ignorant of Botany, should be interrogated respecting the P. Palustris or Swamp Pine, he would instantly revert to the P. Taeda, and his answers would be drawn from that species.
>
> "Grows in dry sandy soils, where the sub-soil however, though 2 or 3 feet below the surface is usually of clay, covering nearly all of the ridges along the coast of Carolina and Georgia within 120 miles of the ocean. Wherever the land becomes moist or fertile, the P. Taeda, and sometimes the P. Rigida encroach upon it."—Elliott, Sk. ii. 637, 638 (1824).

"Occupying all the highest and driest sandy lands" of eastern North Carolina (Pinchot & Ashe, Timber Trees and Forests of North Carolina, 131 (1897)); etc., etc.

Everyone who knows the Long-leaf Pine in its native soil will agree with F. A. Michaux and Elliott that the specific epithet *palustris* as applied to it is wholly misleading. They will also

[1] Du Hamel, Traité des Arbres, ii. 126 (1755).

STELLARIA PALUDICOLA Fernald & Schubert: FIG. 1, TYPE, × ½, from Myrtle Beach, Horry Co., South Carolina, *Weatherby & Griscom*, no. 16,523; FIG. 2, flower, × 1, from North Carolina, *M. A. Curtis*. Mistakenly supposed to be *S. uniflora* Walt.

agree that there are 3-leaved pines in the South which delight in savannas, marshes or wet shores: such characteristic trees as Loblolly or Swamp Pine, *P. Taeda* L., its tendency (although often enough in old fields and dry soils) to grow in swamps noted (above) by Elliott and emphasized by Pinchot & Ashe (p. 125) when they wrote: "The original growth is on moist deep soil, but the second growth has sprung up largely in old fields", etc., whence the common name Old-field Pine. In other words, *P. Taeda*, one of the most aggressive and weedy pines of the South, will grow in either dry or wet habitats and many labels before us bear such data as the following: "peaty pineland", "light, moist soil"; "light, mostly damp soil"; "old fields (also in swamps)"; "moist or wet woods". Another 3-leaved pine of wet or marshy habitats is Pond Pine, Savanna Pine or Swamp Pine, *P. serotina* Michx., Fl. Bor.-Am. ii. 205 (1803), described by the elder Michaux as growing "in humidis . . . cupressetis"; habitats restated in Elliott's "Grows around ponds and in damp soils"; and well stated by Pinchot & Ashe's "It occurs on low peaty or wet sandy soils of the worst quality". A third southern pine which often has three leaves and to which Small applies the name *P. palustris*, is the very southern Slash or Swamp Pine, which was first recognized by Elliott as *P. Taeda*, var. *heterophylla* Ell., Sk. ii. 636, growing "Along the marshes near the mouths of the fresh-water rivers (at least in Georgia)". This was renamed *P. Elliottii* Engelm. in Sargent, Cat. Forest Trees, 74 (1880) and in Trans. Acad. Sci. St. Louis, iv. 186, t. 1–3 (1880). In his Report on Forests N. Am. 202 (1884) Sargent reduced this species to *P. cubensis* Griseb., a West Indian species which, passing up the Florida Keys to peninsular Florida, reaches its northern limit in marshes of southeastern South Carolina. To be sure, Small maintains the West Indian tree which reaches the Keys as distinct from *P. Elliottii*, to which he applies the name *P. palustris*. The separation of the two seems rather doubtful but, even so, *P. Elliottii* (Small's *P. palustris*) is assigned by Small to "Shallow ponds, swamps and low grounds . . . thriving under the influence of either salt or fresh water." Sargent's statement in the Silva, xi. 158, is very different: calling it *P. heterophylla* (Ell.) Sudworth, Sargent said: "mingled with the Long-leaved and Loblolly Pines in the open forests . . . As a timber-tree the

Slash Pine, which produces straight sound spars of large dimensions, is little inferior to the Long-leaved Pine, the wood of the two trees being usually manufactured and sold indiscriminately. It is heavy, exceedingly hard, very strong, tough, durable. . . . ." That is not a very good match for Miller's "I have not heard the wood was of any use but for fuel; . . . and in dry ground they will not thrive". Here, then, are species for which the name *P. palustris* or "Marsh Pine" of Miller or "Pin de marais" of Du Hamel would be perfectly appropriate; for surely these names, as F. A. Michaux and Elliott clearly stated, are not appropriate for Long-leaf Pine.

As emphasized, Miller, who, as shown by his second paragraph, was quoting vaguely what "I have been informed" by those who had seen trees "growing naturally on swamps in many parts of North America", had "not heard the wood was of any use but for fuel". Surely such a characterization of the wood is not applicable to that of Long-leaf Pine, "The most valuable of the Pitch Pines and one of the most important timber-trees of North America, . . . produces heavy, exceedingly hard very strong tough coarse-grained durable wood" (Sargent, Silva, xi. 153 (1897)); nor is it applicable to *P. Elliottii*, *heterophylla* or *cubensis*, as noted above. But *P. Taeda*, "introduced into Europe before 1713" (*Sargent*, l. c. 114), has long been called Loblolly Pine, from *loblolly*, a loutish, foolish or useless person, and, although, when grown on dry upland now an important wood in eastern Virginia, it has the timber thus described by Sargent (l. c. 113): "A large part of the trees of original growth and the oldest and best matured second-growth trees now produce coarse-grained wood, nearly one half the diameter of the trunk being sapwood, while the wood of trees which have grown rapidly on abandoned fields and now supply an important part of the timber cut on the south Atlantic coast, whence it is shipped in large quantities to the north, is very coarse-grained and still more largely composed of sapwood." F. A. Michaux wrote (p. 99):

> "J'ai toujours vu avec surprise que des arbres de 7 décimètres (30 pouces) de diamètre, à 1 mètre (3 pieds) de terre, avoient 5 à 6 décimètres (20 à 24 pouces) d'aubier, et je n'ai jamais trouvé dans des individus d'environ 3 décimètres (un pied) de grosseur, et de 10 à 11 mètres (30 à 35 pieds) de haut, plus de 3 centimètres (un pouce) de

coeur ou de vrai bois: aussi les couches concentriques sont-elles extrêmement espacées dans ce Pin, et c'est ce qui explique la grande rapidité avec laquelle il croît, surtout dans les Etats méridionaux, où j'ai le plus souvent fait cette observation. En Virginie où il vient dans des terreins plus secs, et par conséquent moins rapidement, il n'a pas autant d'aubier, et son bois est d'une contexture plus compacte."

Elliott (p. 636) summarized his account: "but the heart or real wood is much smaller in proportion to its diameter, and even in its best state it is very inferior". So, even though upland (rather than marsh or lowland) stands of *P. Taeda*, especially in Virginia, are now sources of valued timber, the original swamp-grown trees could well have merited Miller's "I have not heard the wood was of any use but for fuel".

While she was in England the junior author was not able to get at any of Miller's material of *Pinus palustris*. However, Dr. George Taylor has obligingly hunted for this material and, though he found no indication that there ever was an actual type of Miller's, he writes: "At Tring. . . . I . . . found an old specimen from Dr. Collinson's Garden at Millhill which it is just possible Miller saw. The sheet is inscribed on the back 'Hort. Drs' Collinson ad Millhill'. The sheet is written up 'Pinus palustris Swamp Pine' in an old hand which, unfortunately, is now hardly legible. I have compared the writing with that of Philip Miller and, though there are certain minor discrepancies, it is possible that he may have put the identification on the sheet. I have mounted two spur shoots from this specimen and send them herewith."

These fascicles and their sheaths, 8 to 8½ inches long (not "a foot or more in length", as stated by Miller), are readily matched by those of *Pinus Taeda* but not by those of the Long-leaf Pine; they could be from Pond Pine, *P. serotina* Michx., but not so well from *P. cubensis*. That the only possibly authentic material of *P. palustris*, bearing that name in a hand only doubtfully Miller's, was from a cultivated specimen of *P. Taeda* L. seems fairly apparent, that species in its primitive habitat (before it became Old-field Pine) well justifying the name *P. palustris*. It is not without significance that Bean, in his remarkably detailed Trees and Shrubs Hardy in the British Isles, ii. 170 (1914), should have very definitely excluded from consideration some species "because their garden value is *nil*".

These include "P. PALUSTRIS *Miller* (P. australis, *Michaux*) . . . too tender to succeed well in our climate" and *P. Taeda* which "can only be grown in the mildest parts of our islands". If Miller's very mixed and indefinite account, based largely on hearsay, stood for a definite species it probably did not include Long-leaf Pine, "too tender to succeed well", and there is no evidence (at least in Bean's synopsis) that the more southern and largely tropical *P. cubensis* was ever grown in England. It seems right, therefore, to follow F. A. Michaux, Loudon, Spach, Endlicher, Lindley & Gordon, Dietrich, Chapman, M. A. Curtis, Parlatore, Engelmann, Small and others in calling Long-leaf Pine PINUS AUSTRALIS Michx. f. That name is absolutely definite; *P. palustris* hopelessly indefinite.[1]

CLEMATIS CANADENSIS Mill. Gard. Dict. ed. 8, no. 5 (1768) is represented by characteristic foliage-material and a flowering spray of *C. virginiana* L. (1753). Miller stated that "the seeds do not ripen in England, unless the season is very warm. There is little beauty in this sort." The fact that his material was staminate may account for the "little beauty" of his plant.

FRAXINUS CAROLINIANA Mill. Dict. ed. 8, no. 6 (1768) was rather vaguely described by Miller:

> 6. FRAXINUS (*Caroliniana*) integerrimis petiolis terretibus fructu latiore. Prod. Leyd. *533. Ash-tree with entire leaves and taper foot-stalks.* Fraxinus Caroliniana, latiore fructu. Rand. Cat. H. Chels. *Carolina Ash with a broad fruit.*

Miller also stated:

> The sixth sort was raised from seeds which were sent from Carolina in the year 1724, by Mr. Catesby. The leaves of this sort hath seldom more than three pair of lobes, the lower being the least, and the upper the largest; these are about five inches long and two broad, of a light green colour, and slightly sawed on their edges; the foot-stalk, or rather the midrib, of the leaves is taper, and has short downy hairs; the seeds are broader than those of the common Ash, and are of a very light colour. As this sort hath not yet produced seeds in England, it is propagated by grafting it upon the common Ash.

Florae Leydensis Prodromus by Royen (1740), cited by Miller, has simply the two citations later given by Linnaeus for his mixed *F. americana* (see p. 168). In other words, the latter references were to two quite different species, since the Gronovian account was based upon a specimen of conventional *F. americana*

[1] Since this discussion went into type Dr. E. L. Little, in Phytologia, ii. 457, 458, July, 1948, has urged the retention of the name *Pinus palustris* in place of *P. australis*.

L. (1753), while the Catesby plate is of the species generally interpreted as *F. caroliniana.*

In the herbarium of the British Museum of Natural History there is a sheet which has sometimes been taken to be the type of *F. caroliniana* (our neg. 110) and which reflects the confusion which has prevailed from the first; for this specimen, bearing the identification, apparently in Miller's hand, *F. caroliniana,* is a characteristic fruiting branch of *F. pennsylvanica* Marsh. In view of Miller's statement that his *F. caroliniana* had not fruited in England this specimen with abundant fruit can hardly be taken as the type of Miller's species! Incidentally, Miller's emphasis on the broad fruit is certainly not applicable to the unusually slender-based and narrow samaras of *F. pennsylvanica.* Furthermore, when Lamarck described his *F. pubescens* Lam. Encycl. ii. 548 (1786) he gave a detailed description of the flowers, *F. pubescens* being identical with *F. pennsylvanica.* Even though an authentic specimen of Miller's species may yet be found, the facts, that the seeds were sent by Catesby and the fruit described as broad, are fair justification for the general interpretation of Miller's species, which for want of a known type is exemplified in the Catesby plate.

The inclusive *F. caroliniana* of the southern Coastal Plain and Cuba is extremely variable, especially in outline of leaflets, degree of pubescence and shape of samara, and upon these characters many species and varieties have been proposed. A study of the assembled material in the Gray Herbarium and that of the Arnold Arboretum indicates that the species may appropriately be treated as consisting of its primary element and two fairly marked geographical varieties, but that otherwise the minor variations, such as three-winged fruits and fluctuating pubescence, are not of such strong character. In all three varieties glabrous and pubescent foliage occur and in the commonest and typical variety the fruits may be flat and two-winged, concave and spoon-shaped or definitely three-winged. In regard to this point the late M. A. Curtis, who certainly knew the trees of North Carolina, wrote when defining his two varieties of *Fraxinus platicarpa* Michx. (which is identical with *F. caroliniana*): "These varieties, like the more common form, frequently have the samaras three winged". In the material with three-winged

samaras two-winged fruits often occur in the same inflorescence, while on those which bear concave and spoon-shaped fruits flat samaras are often found. These variations are in the nature of sports rather than true varieties or forms.

Briefly summarized the three seemingly significant varieties are:

F. CAROLINIANA (typical).—Petioles and rachis glabrous; lower leaflet-surface glabrous or only sparsely pilose along nerves; fruit broadly oblong-oblanceolate to rhombic or subelliptic, either obtuse or acutish, 1–2 cm. broad, 2.5–4.5 cm. long.—Swamps, low woods and pond-margins, Florida to eastern Texas, north on Coastal Plain to southeastern Virginia and Arkansas.—*F. caroliniana* Miller, Gard. Dict., ed. 8, no. 6 (1768). *F. americana* sensu Marsh. Arbust. Am. 50 (1785), not L. (1753). *F. excelsior* sensu Walt. Fl. Carol. 254 (1788), not L. (1753). *F. platicarpa* Michx., Fl. Bor.-Am. ii. 256 (1803); Michx. f. Hist. Arb. Am. iii. 128, t. xiii (1813). *F. triptera* Nutt. Gen. ii. 232 (1818) and Am. Sylva, iii. 62, t. C [large fruit at left] (1849). *Samarpses triptera* (Nutt.) Raf. New Flora, iii. 93 (1838). *Fraxinus americana* L., var. *caroliniana* (Mill.) D. J. Browne, Trees of Am. 398 (1846). *F. americana*, var. *triptera* (Nutt.) D. J. Browne, l. c. 399. *F. nigra* Marsh., subsp. *caroliniana* (Mill.) Wesmael in Bull. Soc. Bot. Belg. xxxi. 113 (1892). *F. caroliniana* Mill., var. *platicarpa* (Michx.) Lingelsh. in Engl., Bot. Jahrb. xl. 221 (1907).

Forma **pubescens** (M. A. Curtis), stat. nov.—Petioles, rachis and lower surface of leaflets tomentose.—Occasional with the tree with glabrous leaflets.—*F. platicarpa* Michx., β. *pubescens* M. A. Curtis in Am. Journ. Sci. ser. 2, vii. 408 (1849), ISOTYPE in Gray Herb. *F. Rehderiana* Lingelsh. in Engl., Pflanzenr. iv[243]. 42 (1920), ISOTYPE in Herb. Arn. Arb. *F. caroliniana* Mill., var. *Rehderiana* (Lingelsh.) Sarg. in Journ. Arn. Arb. ii. 173 (1921). *F. caroliniana* Mill., var. *pubescens* (M. A. Curtis) Fern. in RHODORA, xxxix. 442 (1937).

Var. **oblanceolata** (M. A. Curtis), comb. nov.—Foliage glabrous or essentially so; samaras oblanceolate, either obtuse or acute, 1–1.3 cm. broad, 3.5–5.5 cm. long.—Less common, Florida to southeastern Virginia.—*F. platicarpa* Michx., γ. *oblanceolata* M. A. Curtis in Am. Journ. Sci. ser. 2, vii. 408 (1849), ISOTYPE in Gray Herb. *F. pauciflora* Nutt. Am. Sylva, iii. 61, t. C [excl. 3-winged samara] (1849). *F. platicarpa* Michx., var. *floridana* Wenzig in Engl., Bot. Jahrb. iv. 185 (1883), ISOTYPE in Herb. Arn. Arb. *F. Nuttallii* Buckley in Proc. Phil. Acad. 444 (1860). *F. hybrida* Lingelsh. in Engl., Bot. Jahrb. xl. 220 (1907), portion of TYPE in Herb. Arn. Arb.

Curtis's description of his *F. platicarpa*, γ. *oblanceolata* read

CUCUBALUS POLYPETALUS Walt., basis of SILENE POLYPETALA (Walt.) Fernald & Schubert = *S. Baldwynii* Nutt.: FIG. 1, Walter's type, × ½; FIG. 2, *S. Baldwynii:* two inflorescences, × 1, from Aspalaga, Florida, *Chapman.*

SAPONARIA OFFICINALIS L., to which Asa Gray referred the Walter type: FIG. 3, portion of inflorescence, × 1, from Enfield, Massachusetts, July 22, 1931, *Goodale, Potsubay and St. John.*

"Glabrous. Samaras oblanceolate" and he stated that he had received it from the region of Santee Canal, sent by Ravenel. Such a sheet from Santee Canal is in Ravenel's herbarium at Converse College and a fragment from it is in the Gray Herbarium. Its fruit is like that illustrated by Nuttall for his *F. pauciflora* and by Lingelsheim for his *F. hybrida.*

The following are characteristic northern specimens: VIRGINIA: swamp bordering West Neck Creek, west of Pungo, Princess Anne County, *Randolph & Randolph,* no. 500; siliceous and argillaecous alluvium bordering cypress-swamp, bottomland of Nottoway River, above Cypress Bridge, Southampton County, *Fernald & Long,* no. 6335; wooded bottomland on Fontaine Creek southeast of Taylor's Millpond, Greensville County, *Fernald & Long,* no. 10,391.

Var. OBLANCEOLATA, forma **hypomalaca,** f. nov., foliolis subtus tomentosis.—Local.—The following specimens have been examined: VIRGINIA: cypress-swamp, wooded bottomland, Fontaine Creek, southwest of Haley's Bridge, Greensville County, June 9, 1946, *Fernald & Moore,* no. 15,139 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). SOUTH CAROLINA: Santee River-swamp, *H. W. Ravenel.* LOUISIANA: without further locality, *Hale* (fruit 3-winged).

Var. CUBENSIS (Griseb.) Lingelsh.—Leaflets glabrous or sparsely pilose beneath; samaras narrowly oblanceolate, 5–9 mm. broad, 3–5 cm. long.—Cuba and Florida and presumably farther north.—*F. cubensis* Griseb. Cat. Pl. Cub. 170 (1866). *F. caroliniana* Mill., var. β. *cubensis* (Griseb.) Lingelsh. in Engl., Bot. Jahrb. xl. 221 (1907). *F. viridis* Michx., var. *Berlandierana* sensu Wright et Sauvalle, Fl. Cub. 88 (1873), not var. *Berlandieriana* Torr. (1859).

Although Grisebach originally cited no number, Wright and Sauvalle, citing *Fraxinus cubensis* as a synonym of *F. viridis,* var. *Berlandierana,* gave only one number, *Wright,* no. 3624. The specimen of this number in the Gray Herbarium has leaflets pilose on the nerves beneath, while all other material from Cuba and from Florida has quite glabrous leaflets.

Var. CUBENSIS, forma **lasiophylla,** f. nov., ramulis petiolis rhachibus et paginis inferioribus foliolorum dense tomentosis.—VIRGINIA: upper border of sandy and peaty shore of Darden's Pond, north of Courtland, Southampton County, September 15 and 16, 1946, *Fernald, Long & Clement,* no. 15,335 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

At Darden's Pond var. *cubensis,* forma *lasiophylla* is far re-

moved geographically from typical glabrous or subglabrous var. *cubensis* which, in the two herbaria studied, is represented only from Cuba and very slightly from Florida. The weakness of these herbaria in material from the Coastal Plain of Georgia and the Carolinas may account for its seeming absence from the intermediate broad belt. Forma *lasiophylla* differs from typical var. *cubensis* only in the dense pubescence, a character which in the two commoner varieties seems only formal.

Prunella caroliniana Mill. Gard. Dict. ed. 8, no. 6 (1768), described "foliis lanceolatis integerrimis . . . petiolatis" etc., is represented by a characteristic specimen of *P. vulgaris* L., var. *lanceolata* (Barton) Fernald in Rhodora, xv. 183 (1913). Hultén treats this plant as a subspecies; should it be treated as a species, Miller's binomial would be the proper name. P. novaanglia Mill. l. c., no. 7, is characteristic introduced *P. vulgaris* L. His P. canadensis, l. c. no. 4, is surely not a *Prunella*. The photograph of a very distinctive species which accords with Miller's description of a plant which "grows naturally in North America" has yet to be matched.

Eupatorium ramosum Miller, Gard. Dict. ed. 8, no. 13 (1768), which "grows naturally in Maryland", is represented by a very characteristic specimen of *E. altissimum* L. Sp. Pl. ii. 837 (1753). Since Gray (Syn. Fl.) does not mention Miller's species and Index Kewensis maintains it as a kept-up species, its identity seems not previously to have been established. The photograph shows, not only the habit and inflorescence, but the obtuse linear-oblong phyllaries of *E. altissimum*.

Helianthus ramosissimus Mill. Gard. Dict. ed. 8, no. 8 (1768) is represented by a freely branched specimen of *H. decapetalus* L. (1753). Miller's "foliis lanceolatis" for this and for his no. 7, H. trachelifolius would have been more descriptive of his types if changed to lanceolato-ovatis.

Part IV. Some Species of Thomas Walter (Plates 1103–1115)

Thomas Walter's own herbarium, on which he based his Flora Caroliniana (1788), was early destroyed, but he had given fragments of many of his plants to his publisher, John Fraser (1750–1811) of London, these, so far as known, being essentially

all that exist to show what Walter was describing. John Fraser, senior, passed the collection on to his son and namesake (1799–1860?), who, on May 23, 1849, presented it to the Linnean Society of London, where, as not the work of Linnaeus, it was treated as a "Surplus Collection" (fortunately not as mere rubbish) and sold to the British Museum of Natural History in 1863 for the sum of 15 shillings. This collection, constituting a folio volume of 117 pages, each page with several scraps pasted on, is now carefully safeguarded at South Kensington. According to the detailed account of it by the late James Britten[1] it was studied by only a few American botanists before it reached the British Museum: by Pursh and by Gray but few, if any, others. Numerous recent students have studied Walter's plants and in 1915 Blake discussed in detail several of his species, in Rhodora, xvii. 129–137; the senior author and Mr. Bayard Long studied them in 1930 and the junior author in the winter of 1946–47 made detailed studies of many heretofore unconsidered specimens and photographed the whole series, her results now in a very plump volume on the shelves of the Gray Herbarium. Blake and, after him, Britten have commented on the absence of some of Walter's species from the Fraser volume and the very confused and often quite misleading names which are attached to many specimens; and Britten pointed out that the small specimens and their labels, too often in the hand of one of the Frasers, rather than of Walter, had obviously been cut from their earlier place of mounting and had been remounted in alphabetical order, according to the often wholly erroneous identifications which the mounter (presumably one of the Frasers) had seen fit to place with them. Thus perfectly obvious *Oxalis* is called *Pinguicula* and characteristic *Pinguicula* is called *Utricularia*. On the other hand, a large proportion of the labels are correctly placed, such distinctive species as *Arethusa racemosa* (*Ponthieva*), *A. divaricata* (*Cleistes*), *Cypripedium reginae* or *Eupatorium fusco-rubrum* being properly labeled. As others have pointed out, however, the labels, as they now stand, must be partly ignored and the effort directed to matching the fragments with Walter's descriptions. This we have done in some

[1] See James Britten in Journ. Bot. lix. 69–74 (1921). For an enumeration of articles regarding Walter and his collections see Maxon in Smithsonian Misc. Coll. xcv. no. 8 (1936).

cases and the results are presented in the following pages and plates; many others, not yet worked out, must await future study.

The earliest very critical study of this Fraser series of Walter's plants was, evidently, that of Frederick Pursh; the next by Asa Gray, on his first European trip, in 1839. Gray, most fortunately, left a note-book containing his identifications, although he was inclined to doubt the value of the collection on account of the confusion of labels. To what extent the Fraser series had been tampered with, aside from the remounting and the misidentifications, we can not say, but some of the authentic specimens were surely removed. Thus Gray in 1839, made memoranda which, though already published, may be here repeated, the first from Rhodora, xli. 537, footnote (1939). "Gray noted under *Clematis holosericea*, which Pursh described from '*Herb. Walter*': 'There is nothing in Walter's herb. to correspond to this . . . Pursh must have carried off the specimen, or part of it'. Then follows in another ink: 'P. S. He has taken it all to herb. Lambert—which see'. Pursh and his patron, Lambert, were not the only early botanists who felt that Walter's plants would be of better service elsewhere (for instance, see note on *Lobelia glandulosa* by Fernald & Griscom, Rhodora, xxxix. 497)". The latter note was as follows, this after the statement that nothing could be found in 1937 in Walter's herbarium to match his description of *L. glandulosa*. "However, in the Gray Herbarium there is a full raceme of such a plant, with definitely dentate calyx-lobes, which was labeled by Asa Gray as follows; '*Lobelia* Walt. *L. glandulosa* fl.! Cf. no. 2 in notes.' This specimen is in a pocket labeled in Gray's hand: 'Herb. Walter! See notes.'

"The pertinent facts are as follows. Asa Gray examined the Walter Herbarium in February, 1839, and left a small book of notes upon it. Under *Lobelia glandulosa* there is the following comment: 'I take fl. fr. specimen verum, but the cal. segments are entire. A loose spec. without specific name—a smooth plant—agrees better with descr [iption] as to calyx (no. 2).' It becomes apparent, therefore, that the only element which Walter had with '*calycis laciniis dentatis*' was given to Asa Gray. In view of the fact that this is the only extant type of the Walter

THERMOPSIS VILLOSA (Walt.) Fernald & Schubert, all figs. × 1½: FIG. 1, TYPE of *Sophora villosa* Walt.; FIGS. 2 and 3, portions of inflorescence of *Thermopsis caroliniana* M. A. Curtis, from mountains of North Carolina, 1842, *Buckley;* FIG. 4, portion of inflorescence of *T. caroliniana* from near Highlands, Macon Co., North Carolina, *Biltmore Herb.*, no. 1332[b].

BAPTISIA CINEREA (Raf.) Fernald & Schubert: FIG. 5, portion of inflorescence, × 1½, from Franklin, Virginia, 1867, *W. M. Canby,* the species erroneously supposed to be *Thermopsis villosa* Walt.

plant with dentate calyx-lobes, the plant definitely accepted by Elliott, Gray and McVaugh as *L. glandulosa*, the name should stand for this element. A portion of the inflorescence has been returned to the British Museum." If anything is now removed from the Fraser volume we shall know about it; we have a complete photographic reproduction of all the pages.

MELANTHIUM HYBRIDUM Walt. Fl. Carol. 125 (1788), is often cited with a mark of interrogation as probably synonymous with *M. latifolium* Desr. in Lam. Encycl. iv. 25 (1796), the latter collected in Virginia by Fraser and described with "Les pétales . . . unguiculés, à onglets presqu'aussi longs que les lames. Celles-ci ont une forme pour ainsi dire orbiculaire, & paroissent légèrement ondulées sur les bords." A photograph of Desrousseaux's TYPE before us shows it to be correctly understood. We feel, however, that Walter's earlier name was given to the same species. Walter divided *Melanthium* into two series, the first with "Petalis unguiculatis imprimis albis demum obscuro-rubris seminibus *semi ovatis*", the second "Petalis sessilibus, seminibus *ovatis*", the second series containing plants now referred to *Amianthium*, *Tofieldia*, etc. Walter's *M. hybridum*, with unguiculate petals and semi-ovate seed, was further described "petalis plicato-undulatis mmaculatis [evident misprint], floribus masculis et foemineis mixtis". One has only to look at representative specimens of *M. latifolium* and at the illustration (fig. 982 in ed. 1, fig. 1236 in ed. 2) in Britton & Brown in order to see a depiction of the "petalis plicato-undulatis" and an inflorescence "floribus masculis et foemineis mixtis". The species occurs in both the Carolinas and the detailed illustrations in Small's Manual show nothing else in the South which could have been meant by Walter. We are taking up M. HYBRIDUM Walter. It was recognized by Elliott, who gave a detailed description of a specimen received from Georgia, with "sterile and fertile flowers intermingled in each panicle. *Petals* persistent, orbicular, plaited, the margins waved or repand."

PANCRATIUM CAROLINIANUM Walt. Fl. Carol. 120 (1788), is represented by an unusually well prepared inflorescence, showing the very large crown with stamens borne at the summits of the broad lobes exactly as in the Carolinian and Georgian *P. coronarium* LeConte in Ann. Lyc. N. Y. iii. 145, t. 4, figs. 7–9 (1830),

which "Inhabits in Savannah river, at the rapids, a few miles above Augusta, where it covers the rocky islets. I have also seen it in the Congaree river, at Columbia, in South Carolina, occupying similar situations." Marc Catesby had a beautiful plate of the plant, the large crown and other characters as shown in the Walter specimen and in LeConte's figures, Catesby calling it *Lilio-Narcissus Polianthus, flore albo,* Catesby Carol. ii. Append. 5 (1754), he saying "These Plants I saw growing in a bog near *Palluchucula,* an *Indian* town on the *Savanna* river, within the precinct of *Georgia.*" The Catesby account and plate became the basis of *Hymenocallis caroliniana* Herbert, Append. 44 (1821), Herbert making no reference to Walter. *H. caroliniana* Herbert, was, then, identical with and found in the same region as Walter's *Pancratium carolinianum* but not based upon it. The later *Hymenocallis coronaria* (LeConte) Kunth (1850) should, therefore, be called

Hymenocallis caroliniana Herbert, Append. (to Bot. Reg. vii), 44 (1821). *Pancratium carolinianum* Walt. Fl. Carol. 120 (1788). *P. coronarium* Le Conte in Ann. Lyc. N. Y. iii. 145, t. 4, figs. 7–9 (1830). *H. coronaria* Kunth, Enum. v. 855 (1850).

Index Kewensis does not clarify the situation by referring *Hymenocallis caroliniana* Herb. to the quite different Mediterranean *Pancratium maritimum* L., while *H. coronaria,* identical with and from the same region as *H. caroliniana,* is referred to the smaller-crowned *H. crassifolia* Herbert. It is evident that the names in the genus need clarification.

Asarum carolinianum Walt. Fl. Carol. 143 (1788) is represented by no specimen but the description clearly indicates, as has been thought, some form of *A. canadense* L. (1753). A. virginicum sensu Walt., not L. (1753) is represented by a characteristic leaf of *A. arifolium* Michx. (1803) and it agrees with Walter's description.

Polycarpon uniflorum Walt. Fl. Carol. 83 (1788). The very clear description of this plant, with "foliis succulentis ellipticis humisparsis, pedunculis lateralibus unifloris", is so like that of Michaux's *Spergulastrum lanuginosum,* the basis of *Arenaria lanuginosa* (Michx.) Rohrb., that it seems wholly probable that the suggested identification of the two as one species by Robinson in Gray, Syn. Fl. i[1]. 240 (1897) was quite justified. Since the

ANONYMOS (Lupino affinis) ROTUNDIFOLIA Walt. = CROTALARIA ROTUNDIFOLIA (Walt.) Poir., as to basonym only, = *C. maritima* Chapm.: FIG. 1, Walter's TYPE, × ca. ⅓; FIG. 2, the TYPE, × 1; FIG. 3, plant of *C. maritima* Chapm., × 1, from Hillsborough Co., Florida, *Fredholm*, no. 6290.

name *Arenaria uniflora* is preempted no transfer of Walter's name to *Arenaria* is called for.

STELLARIA UNIFLORA Walt. Fl. Carol. 141 (1788), our PLATE 1103, FIGS. 1 and 2, has evidently been misinterpreted by Robinson in Gray, Syn. Fl. N. Am. i[1]. 237 (1897) and by later as well as some earlier authors. Robinson's description reads:

> "weak and slender: stems decumbent or suberect, a foot in length: leaves linear, acute, or the lower lanceolate, gradually narrowed below, mucronate, 8 to 12 lines [1.7–2.5 cm.] in length; the floral much reduced: flowers few, solitary, on elongated slender peduncles: calyx soft in texture, sepals scarcely veined", this species coming under a section with "Petals retuse or shortly bifid, divided only one fourth to one half the way to the base", etc.

Small, calling the plant of Robinson's treatment *Sabulina uniflora* (Walt.) Small, gives (Man. 498) the following description:

> "Stems 1–3 dm. tall: leaf-blades linear, 1–4 cm. long, acute: pedicels 2–8 cm. long: sepals lanceolate, 4–5 mm. long, acute: petals linear-cuneate, 6–8 mm. long: seed 0.5 mm. long, minutely roughened. [*Stellaria uniflora* Walt.]—Meadows or springy places, Coastal Plain and adj. provinces, Fla. to Ala. and N. C.—Spr."

There is no question about what plant Robinson and, after him, Small intended by *Stellaria uniflora* or *Sabulina uniflora*, a paludal species illustrated in our PLATE 1104; but that it is what Walter had before him and described is very seriously doubted. Walter, calling his species a *Stellaria* because of the emarginate petals, his *Arenaria* having "Petala 5 integra" (Walter having the characters, as now understood, reversed), gave a description which is scarcely applicable to the plant of Robinson and of Small, for the latter weak and paludal species has dilated and fleshy leaves, glabrous calyx and rather deeply notched petals. Here was Walter's account:

> *uniflora* 1. foliis subulatis oppositis; pedunculis alternis unifloris foliis triplo longioribus; calycibus subhirsutis (non striatis) petalis calyce longioribus, albis, emarginatis; capsulis ovatis.

Such a description, emphasizing the *subulate* leaves, subhirsute calyx and merely emarginate petals, certainly would be misapplied to the plant generally called *Stellaria* or *Sabulina uniflora* but, most fortunately, Fraser had a good specimen (our PLATE 1103, FIGS. 1 and 2) of a plant marked by him "No Name"

(on p. 100) which to us seems to be what Walter described. This has subulate leaves, and specimens (fig. 3) which closely match it have the plane sepals somewhat glandular-hispidulous ("calycibus subhirsutis (non striatis)"). Asa Gray, examining this page, made the memorandum in his notes that the specimen marked "No Name" looked like *Arenaria brevifolia* Nutt. The Walter diagnosis and the specimen which it matches are certainly of the latter species, as Gray indicated. Small's figures on page 499 of his Manual, illustrating *Sabulina*, were evidently made from *S. brevifolia* (Nutt.) Small, they showing the details of flower and fruit of *A. brevifolia:* the white-margined blunt sepals with hispidulous back, the emarginate petals and the ovoid capsule slightly exceeding the calyx[1] ("calycibus subhirsutis (non striatis) petalis calyce longioribus, albis, emarginatis; capsulis ovatis".—Walter).

From Index Kewensis one would assume that the name *Arenaria uniflora* was used for a species by Poiret, Encycl. vi. 375 (1804), but Poiret was not describing a species but a minor variation of *A. recurva* Allioni as "β. *Arenaria* (uniflora)", this plant treated by such authors as Schinz & Thellung or Ascherson & Graebner as a trivial variation, with no binomial cited in their bibliography.

There is, however, an earlier *Arenaria uniflora* which was properly described as a new species, so that Walter's *Stellaria uniflora* cannot be transferred to *Arenaria.* The name in question is *Arenaria uniflora* Luce, Topogr. Nachr. Oesel, 141 (1823). This volume by Luce or Lucé seems to be very rare and its contents often unknown even to botanists of the Baltic area. Thus, Fenzl in Ledebour, Fl. Ross. ii. 167 (1843) cites with doubt "Arenaria uniflora. Lucé *Fl. osil.?*", while some other writers on the region, even in modern works on the flora of Oesel, do not mention the author or his species. The name of the author, likewise, seems to vary. On the title-page of the *Topographische Nachrichten von der Insel Oesel* he appears as "*Dr. Joh. Wilh. Ludw. v. Luce*". On the secondary title-page, *Prodromus Florae osiliensis*, his name is similarly given, and the long Vorrede

[1] Although Small's artist well displayed the entire blunt sepals and the emarginate petals, the author or printer of Small's description got badly tangled, the text reading "sepals . . . truncate or emarginate: petals spatulate or obovate: spatulate, 4–5 mm. long".

is signed Dr. *v. Luce.* Pritzel, however, lists him as Lucé and such of his binomials as were caught in Index Kewensis are ascribed to Lucé.

The Prodromus is very rarely represented in American libraries. For an opportunity to examine a copy we are indebted to the courtesy of the Librarian of the University of Chicago.

As to the plant treated by Torrey & Gray and by Robinson as *Stellaria uniflora* and by Small as *Sabulina uniflora,* some earlier authors were much confused. Thus, Elliott, Sk. i. 520 (1821), described as *A. glabra* Michx. (which Small assigns to "Cliffs, Blue Ridge and Appalachian Plateau") a plant which "Grows in the swamps of the Santee river, from Murray's to Nelson's Ferry. Dr. Macbride", and cited *Stellaria uniflora* Walt. as an unquestioned synonym. The plant of swamps of the Santee River, as shown by characteristic material collected by Ravenel as "*Arenaria glabra*" but marked by Gray as *Stellaria uniflora,* is the paludal plant of Torrey & Gray, Robinson and Small. Although Gray, supposing the latter to be Walter's *Stellaria uniflora,* renamed it *Alsine Walteri* Gray, Genera, ii. 34 (1849)—*Alsine* "Walteri (Stellaria uniflora, *Walt.*)", his new name must apply nomenclaturally to the plant of Walter, not to the one mistakenly taken for it. The paludal species should evidently be called

Stellaria **paludicola,** sp. nov. (tab. 1104), planta stolonifera stolonibus filiformibus diffusis repentibus; caulibus laxe adscendentibus vel diffusis pergracilibus ad 4 dm. longis glabris deinde ramosis; foliis linearibus vel oblanceolatis glabris primariis 1.5–4 cm. longis 1–4.5 mm. latis acutis; pedunculis axillaribus vel terminalibus valde adscendentibus 2–8 cm. longis; sepalis glabris lanceolatis acuminatis 3–5 mm. longis; petalis anguste cuneatis 6–10 mm. longis apice emarginatis; staminibus petalis brevioribus.—Shallow streams, pools, wet meadows, boggy depressions and grassy swamps, Florida and Alabama, north along the Coastal Plain to North Carolina. Type: edge of small stream, golf-links, Myrtle Beach, South Carolina, April 19, 1932, *Weatherby & Griscom,* no. 16,523 (in Herb. Gray.).

Cucubalus polypetalus Walt. Fl. Carol. 141 (1788), under a genus defined "*Cal.* inflatus. *Petala,* fauce nuda. *Caps.* 3-locularis", was, obviously a *Silene.* The species was very briefly characterized:

polypetalus. foliis oppositis, ovato-lanceolatis; floribus polypetalis.

Asa Gray, in manuscript memoranda, as well as beside the specimen in the Fraser volume, stated that it is *Saponaria officinalis* with double flowers; but the specimen, no. 112 on page 38 (our PLATE 1105, FIG. 1) is quite evidently the summit of a flowering stem of *Silene Baldwynii* Nutt. Gen. i. 288 (1818), originally described with "petals divaricately laciniate (FIG. 2), the very narrow laciniae rendered by Walter "polypetalis". The long and narrow segments of the petals are displayed in Walter's specimen (although crumpled) as well as in the specimens of *Silene Baldwynii*. They do not occur in the flowers of *Saponaria officinalis* (FIG. 3). Index Kewensis hit somewhat nearer by identifying *Cucubalus polypetalus* with *Silene ovata* Pursh, in this following a suggestion made by Pursh himself. That tall species, however, has long acuminate leaves, a prolonged thyrse of relatively small flowers with the slender calyx in anthesis only 6–10 mm. long. Walter's species has the small bluntish leaves, corymbiform inflorescence and large calyx (in anthesis 1.8 cm. long) of *Silene Baldwynii*. It is, therefore, necessary to call it

SILENE **polypetala** (Walt.), comb. nov. *Cucubalus polypetalus* Walt. Fl. Carol. 141 (1788). *Silene Baldwynii* Nutt. Gen. i. 288 (1818).

In view of Asa Gray's unfortunate identification of *Cucubalus polypetalus* with the very different *Saponaria officinalis*, we quote, as did the late James Britten (in Journ. Bot. l. c. 70 (1921)) from the Letters of Asa Gray, i. 136 (1893) and append Britten's remarks.

> "I . . . find the examination very tedious, as the specimens are very often not labeled, except with the genus in his 'Flora,' so that I have first to make out his own species, and then what they are of succeeding authors.
>
> "The specimens are mostly mere bits, pasted down in a huge folio volume. I suspect this was done by Fraser, and the labels have sometimes been exchanged, so that it requires no little patience. Some of the things I most wished to see are not in the collection, and there are several in the collection which are not mentioned in the 'Flora'. You would laugh to see what some of the things are that have puzzled us: thus, for instance, his 'Cucubalus polypetalus' is Saponaria officinalis! His 'Dianthus Carolinianus' is Frasera! in fruit."

Britten added:

> "Gray is probably right in his identification of the wretched specimen of '*C. polypetalus*' with *Saponaria*—though Pursh (Fl. Amer. Sept., 316) had doubtfully referred it to his *Silene ovata*, which is based on a speci-

IMPATIENS CAPENSIS Meerburgh, portion of original plate, × 1 = I. BIFLORA Walt.

men in Herb. Banks endorsed: 'Cherrokee Countrey, W. V. Turner, 1769: Indian name Ounenake Ounostaatse—White root': but the *Dianthus* is not *Frasera*, but *Dodecatheon Meadia*. Gray made notes on the collection which, or a copy, he sent to Torrey; if these are anywhere preserved, their publication would be of considerable interest."

Without very careful checking, Gray's note-book, before us, might be misleading, since, at the age of 28 and with limited knowledge of southern plants, his identifications were often based on familiarity with the flora of eastern New York.

Actaea pentagyna Walt. Fl. Carol. 151 (1788), although not represented by any preserved specimen, was presumably *Anemonella thalictroides* (L.) Spach. Walter's description is good:

pentagyna floribus solitariis, pedunculis e sinu foliorum 2. ortis; corollis petalis septem obovato-oblongis, albis; pericarpio lanceolato monospermo; foliis biternatis, foliolis obtusis tridentatis.

Except for the "pericarpio . . . monospermo" the description could apply to *Isopyrum biternatum* (Raf.) Torr. & Gray, but *Isopyrum* has follicles with more than 1 seed and it is not reported from east of the Alleghenies. *Anemonella* is common in southeastern Virginia and extends across western Carolina to northern Florida. Its lanceolate achenes are 1-ovulate and, though commonly 7 or more, are frequently only 3 (or even 2 or 1). The disposition by *Index Kewensis* of *Actaea "pentagyna*, Walt. Fl. Carol. 151 = Cimicifuga americana" is far from satisfactory.

Chrysosplenium oppositifolium sensu Walt. Fl. Carol. 140 (1788), is a striking illustration of Walter's isolation from comparative material and of the Frasers' inaccuracy in guessing at the identities of the fragments they had from Walter. Walter was in doubt as to both genus and species, accompanying a compiled generic diagnosis by the generic name "183. CHRYSOSPLENIUM?" and considering his plant as possibly *C. oppositifolium* L., a Eurasian herb resembling our *C. americanum*. How far from the Eurasian plant was Walter's is shown by his description:

oppositifolium? 1. foliis oppositis luteis tomentosis ovatis sessilibus, caule aureo tomentoso.

The marginal memorandum in the hand which was presumably that of Dr. James Macbride (see below) gives the clue, for this reads "Eriogonum tomentosum Michx." The Fraser scrap-

book contains no specimen marked *Chrysosplenium* but on p. 38 there is a broken-off branch of an inflorescence of *Eriogonum tomentosum* bearing Fraser's label "F. 306 Cucumis", etc., an even more unfortunate identification than Walter's. Since the lower leaf-surfaces of *Eriogonum tomentosum* become fulvous in age, it seems evident that *Chrysosplenium oppositifolium* sensu Walter, not L., belongs in the synonymy of that species.

As stated, our clue to the above identification was the marginal memorandum made, evidently by James Macbride, a South Carolinian and contemporary of Stephen Elliott, in the copy of Walter's Flora Caroliniana which belonged to him from 1812–1816 and which, after passing through various hands, originally from Thomas Walter to John Watson, then to James M. Watson in 1789, then to Macbride, through J. M. Watson's daughter, Mrs. Catharine Davis, then by James Macbride to Jacob Bigelow and on through Francis Parkman to Charles Sprague Sargent, was finally reproduced and issued by Dr. E. D. Merrill in 1947. The marginal memoranda, apparently in the handwriting of Macbride, who knew the flora of Walter's region, are very significant. As stated, it was he who detected what Walter meant by *Chrysosplenium*.

The Type of Sophora villosa Walt. Fl. Carol. 134 (1788), our plate 1106, fig. 1, was very briefly described as follows:

> *villosa* 3. fol. ternatis lanceolatis, caule calycibusque villosis, floribus cinereis spica terminali.

The species was transferred to *Podalyria* as *P. villosa* (Walt.) Michx. and then to *Baptisia* by Nuttall. Elliott, Sk. i. 468 (1817), expressed some doubt as to the identity of the plant, saying "It is not improbable that Michaux has described, under this name, a different species from that of Walter". Torrey & Gray, Fl. N. Am. i. 384 (1843), similarly indicated doubt: "We have drawn up our description from the specimen of Mr. Curtis, which we think is the same with the plant of Michaux. We are doubtful, however, whether it be the Sophora villosa of Walter, in whose herbarium a portion of a raceme of the plant only exists; and in this the calyx is more villous."

The Walter type (fig. 1) consists of a portion of a spiciform raceme with the flowers subsessile, each subtended by an oblong

bract when young. The rachis and calyces are densely spreading-villous and the plant obviously has nothing to do with that which currently passes as *Baptisia villosa* (FIG. 5). In its subsessile flowers, oblong bracts and heavily villous rachis and calyx it is, however, closely matched by specimens of *Thermopsis caroliniana* M. A. Curtis (FIGS. 2–4). Although the latter varies in having the inflorescence open or relatively dense, the inflorescence of the Walter plant is readily matched by specimens of *T. caroliniana* with more open inflorescences. It therefore becomes necessary to call *T. caroliniana*

THERMOPSIS **villosa** (Walt.) comb. nov. *Sophora villosa* Walt., Fl. Carol. 134 (1788). *Thermopsis caroliniana* M. A. Curtis in Am. Jour. Sci. ser. I, xliv. 80 (1843). PL. 1106, FIGS. 1–4.

In PLATE 1106 FIG. 1 shows a portion of the inflorescence of Walter's plant, × 1½; FIGS. 2–4, portions of the inflorescence of *T. caroliniana*, from North Carolina, also × 1½; and FIG. 5, a portion of the inflorescence from Virginia of *Baptisia cinerea*, which has erroneously passed as the same as the Walter plant, also × 1½.

Since the binomial, *Baptisia villosa*, was based on a plant which was not conspecific nor even congeneric with what usually passes as *Baptisia villosa*, the latter plant requires a new name. The only available name published for it seems to be *Lasinia cinerea* Raf., New Fl. N. Am. ii. 50 (1837), clearly a substitute for the *B. villosa* of authors. Rafinesque's account was as follows:

> "333. LASINIA CINEREA Raf. B. villosa of Authors, stem and leaves beneath pubescent, stipules linear, leaves subsessile, folioles elliptic obtuse—in Carolina, Michaux says the flowers are pale, Elliot calls them grey."

This necessitates the combination:

BAPTISIA **cinerea** (Raf.), comb. nov. *Lasinia cinerea* Raf., New Fl. N. Am. ii. 50 (1837). *B. villosa* sensu Nutt., Gen. N. Am. Pl. i. 281 (1818) and later auth., not *Sophora villosa* Walt., basonym. PLATE 1106, FIG. 5, × 1½.

In her monograph of the genus *Baptisia* (Ann. Mo. Bot. Gard. xxvii. 181 (1940)), Larisey cites, in the synonymy of *B. villosa*, *Lasinia fulva* Raf. l. c. 49, described from "Tennessee and Arkanzas", but she states the range of her *B. villosa* "coastal plain of Virginia, south to South Carolina" (page 182), and describes as

a separate plant, ×*B. stricta* Larisey, l. c. 166, from Arkansas and Oklahoma, stating that this is the *B. villosa* of recent authors in part (as to the plant of Arkansas) and on page 131 she specially points out that the plant which has been mistakenly called *B. villosa* in Arkansas is really her newly proposed ×*B. stricta*. It seems probable that ×*B. stricta* is antedated by Rafinesque's *Lasinia fulva* which he called "A very distinct sp. probably blended among *B. villosa* . . ."

Anonymos (Lupino affinis) rotundifolia Walt. Fl. Carol. 181 (1788), our plate 1107, figs. 1 and 2, the *Crotalaria rotundifolia* Poiret (1811) as to basonym, has usually been identified with *C. ovalis* Pursh (1814) and later, by Senn in Rhodora, xli. 341 (1939), with *C. angulata* Mill. (1768). This identification of Walter's plant was made by Gray in 1839, he then recording in his manuscript-notes under *Lupino affinis* that "*rotundifolia!* = *ovalis*". At that time, of course, only the single rounded-leaved and decumbent species was recognized in the southeastern states, the plant now called *C. angulata*, with leaves elliptic or elliptic-oblong and strongly rounded at both ends, the new growth, rachis, calyces, etc. rufescent or fulvous with spreading villosity. Subsequently, *C. maritima* Chapman (1883) has been separated out, a similar plant with short and appressed pilosity, the leaves subcuneately tapering to but slightly rounded at base. This more localized species is cited by Small as extending from Florida northward on the Coastal Plain to North Carolina, and Senn cites characteristic material of it from the neighborhood of Savannah, close to Walter's territory. It is, therefore, significant that the very well preserved type or isotype of Walter's species on p. 67 of the Fraser volume (our figs. 1 and 2), which Gray examined, is of characteristic *C. maritima*. Walter's specific name was unfortunately selected but his "caule subdecumbente, foliis integris rotundatis pilosis" is all right if we take "rotundatis" to refer to the rounded summit of the leaf. The leaves of the preserved specimen from Walter exemplify Daydon Jackson's definition under "**rotund'**, *rotund'us* (Lat., round), rounded in outline . . . but a little inclined towards oblong"! It would seem, then, that we must take up Walter's name in a different sense than has been done:

Crotalaria rotundifolia (Walt.) Poir. Encycl. Suppl. ii.

HYPERICUM DENTICULATUM Walt., var. TYPICUM = *H. angulosum* Michx. = *Brathys linoides* Spach = *H. virgatum ovalifolium* Britton = *H. denticulatum*, var. *ovalifolium* (Britton) Blake: FIG. 1 (right and left) TYPE of *H. angulosum* Michx. and of *Brathys linoides* Spach, × ½; FIG. 2, portion of a characteristic specimen from Walter's region, east of Andrews, Georgetown Co., South Carolina, *Godfrey & Tryon*, no. 156, × 1.

402 (1811), as to basonym, not as to plant described with "feuilles . . . arrondies, ... velues à leur insertion . . . ; pédoncules velus, un peu rousseâtres . . . bractées . . . velues; le calice velu"; not *C. rotundifolia* sensu later authors. *Anonymos rotundifolia* Walt. Fl. Carol. 181 (1788). *C. maritima* Chapm. Fl. So. U. S. ed. 2, Suppl. 614 (1883).

Var. **Linaria** (Small), comb. nov. *C. Linaria* Small, Man. Se. Fl. 679, 1505 (1933). *C. maritima*, var. *Linaria* (Small) Senn in Rhodora, xli. 347 (1939).

Hedysarum grandiflorum Walt. Fl. Carol. 185 (1788).—As Blake[1] pointed out, the name *Desmodium grandiflorum* (Walt.) DC., based on *H. grandiflorum* Walt., was incorrectly applied by American authors to *Desmodium glutinosum* (Muhl. ex Willd.) Wood (*D. acuminatum* (Michx.) DC.) for many years. On the basis of an examination and comparisons made of Walter's type at the British Museum by Mr. E. G. Baker, Blake recommended that the the name *D. grandiflorum* (Walt.) DC. be taken up for the plant long known as *D. bracteosum* (Michx.) DC. (and also, more correctly, as *D. cuspidatum* (Muhl. ex Willd.) Loud.). Recent examination of Walter's specimen, which is extremely fragmentary, confirms, nevertheless, the identity of his plant with those of Michaux and Muhlenberg.

In Rhodora, xxxviii. 96–97 (1936), Fassett showed that application of the homonym rule would preclude use of Walter's epithet, since it was a later homonym, antedated by *Hedysarum grandiflorum* Pall. (1773), and that, since a legitimate epithet was available in *Desmodium*, it must be used. The proper name to use for this species is, therefore,

Desmodium cuspidatum (Muhl. ex Willd.) Loud., Hort. Brit. 309 (1830) [incorrectly attributed to DC.]; Torr. & Gray, Fl. N. Am. i. 360 (1838).

Note on Impatiens biflora Walt. Fl. Carol. 219 (1788).—Apparently no type-material of this species is preserved, but a space on the page where it would be expected shows that a specimen has been destroyed. However, it seems to have been overlooked by American botanists that there is an earlier binomial which can hardly be set aside and which, without doubt, was based upon the familiar American plant. This was *Impatiens capensis* Meerburgh, Afb. Zeldz. Gewass. t. x (1775); Pl. Rar.

[1] Blake, S. F. in Bot. Gaz. lxxviii. 277, 278 (1924).

t. x (1789). Meerburgh, having cultivated plants in Holland, unfortunately assumed that they had originated at the Cape of Good Hope; but his beautiful life-sized colored plate is clearly that of *I. biflora* Walter which was published thirteen years later. Meerburgh's description was good:

> "IMPATIENS (Capensis) TAB. X.
> Planta annua, sub dio laete crescens, ad altitudinem quatuor pedum, caules lucide rubescunt, geniculatae, stabiles, rami alterni teretes, flores lutei intus rubro maculati;
> Habitus Impatientis Noli-tangere.
> Habitat ad Promontorium Bonae. Sp."

A portion of his plate, from the second reference cited above, is reproduced, without color, × 1, as our PLATE 1108.

Attention was directed to Meerburgh's species by G. M. Schulze in Notizbl. Bot. Gart. Mus. Berlin-Dahlem, xiii, nr. 120: 662–665 (1937), Schulze pointing out that *I. capensis* Meerb. is not the same as *I. capensis* Thunb., Prod. Fl. Cap. 41 (1794), the latter being a species actually of the Cape; while the former, although not positively identified by Schulze, was a plant unknown from the Cape, for which he suggested identity with Walter's species. Somewhat later B. L. Burtt, under the title "MEERBURGH'S IMPATIENS CAPENSIS", discussed the matter at length in Kew Bulletin for 1938, no. 4: 161–163, demonstrating by a study of the literature of the period that plate 10 was the last plate of the first part of Meerburgh's great illustrated work and that it was definitely published in 1775; Burtt saying in part:

> "A glance at the plate is sufficient to show that it is quite different from any of the South African balsams and it may, I think, be easily recognized as *Impatiens biflora* Walt. (*I. fulva* Nutt.), a common North American species now naturalized in several parts of Britain. There is no specimen of Meerburgh's now in existence and Schulze (l. c.) is of the opinion that the plate cannot be identified as *I. biflora* with absolute certainty; he therefore ranks *I. capensis* as 'species incerta'. Several botanists at Kew, however, have recognized the illustration of *I. capensis* as *I. biflora*, and there does not seem to be sufficient doubt to justify the rejection of Meerburgh's name. *I. capensis* Meerburgh (1775) clearly antedates *I. biflora* Walt. (1788) and must therefore stand as the correct name for the North American species, although the specific epithet is unfortunately quite inappropriate."

Since there seems no way to avoid the inappropriate binomial,

HYPERICUM DENTICULATUM Walt., var. RECOGNITUM Fernald & Schubert: portion of TYPE, × 1.

Impatiens capensis Meerb., it is necessary to make the following minor transfers:

I. CAPENSIS Meerb., forma **immaculata** (Weatherby), comb. nov. *I. biflora* Walt., f. *immaculata* Weatherby in RHODORA xix. 117 (1917).

Forma **citrina** (Weatherby), comb. nov. *I. biflora* Walt., f. *citrina* Weatherby in RHODORA l. c. 115.

Forma **albiflora** (Rand & Redfield), comb. nov. *I. fulva* Nutt., f. *albiflora* Rand & Redfield, Fl. Mt. Desert, 88 (1894); *I. biflora* Walt., f. *albiflora* (Rand & Redfield) Weatherby in RHODORA l. c. 115.

Forma **Peasei** (A. H. Moore), comb. nov. *I. biflora* Walt., f. *Peasei* A. H. Moore ex Weatherby in RHODORA l. c. 116.

Forma **platymeris** (Weatherby), comb. nov. *I. biflora* Walt., f. *platymeris* Weatherby in RHODORA xxi. 99 (1919).

HYPERICUM DENTICULATUM Walt. Fl. Carol. 190 (1788) is represented by no material but the description is a good one for the plant of the Coastal Plain from New Jersey to South Carolina which Michaux described as *H. angulosum* Michx. Fl. Bor.-Am. ii. 78 (1803). In fact, Michaux himself thought, correctly it would seem from his type of *H. angulosum* (our PLATE 1109, FIG. 1, × ½) and from abundant material from Walter's general region in eastern South Carolina (our PLATE 1109, FIG. 2), that his newly proposed species might be Walter's *H. denticulatum*. Walter's description of his species, standing between and allied to his *H. pilosum* (*H. setosum* L.) and his *H. quinquenervium* (*H. mutilum* L.), was as follows:

> *denticulatum* 5. floribus trigynis submagnis, petalis dente unico laterali, caule erecto quadrangulo, foliis subamplexicaulibus crassis ovatis.

Michaux's account of his *H. angulosum* was similar:

> ANGULOSUM. H. herbaceum, erectum, quadrangulum: foliis lanceolato-ovalibus, acutis: panicula dichotoma, distanter alterniflora: calyce inferne anguloso.
> *H. denticulatum?* WALT.
> *OBS.* HYPERICO *canadensi* paulo majus. Folia arcte sessilia, erectiuscula, 5-nervia. Flores pusilli; calyce subcampanulato; foliolis oblongis, inferne prominenti-carinatis.
> *HAB.* in paludosis Carolinae.

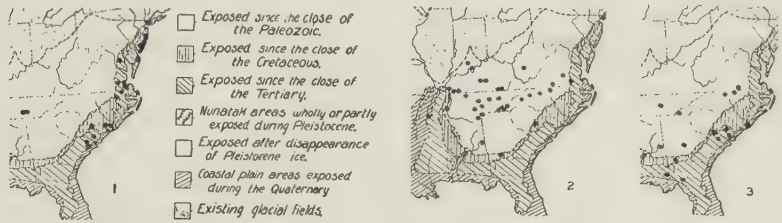
The short and narrowly oval or ovate leaves rounded to subamplexicaul bases and the broad sepals characterizing typical *H. denticulatum* (*H. angulosum*), contrasted with the mostly much

longer and narrowly elliptic-oblong leaves with acute or subacute bases of the plant which Blake in Rhodora, xvii. 134 (1915) treated as typical *H. denticulatum*. As synonyms of the plant with narrower and acute-based leaves Blake gave "*H. virgatum* Lam. Encyc. iv. 158 (1796); *H. angulosum* Michx."; and he treated the plant with short ovate or oval leaves, so frequent in the Pine Barrens of New Jersey, thence to the Coastal Plain of the Carolinas (the plant described by Walter and by Michaux) as "H. denticulatum Walt. var. **ovalifolium** (Britton) Blake (*H. virgatum ovalifolium* Britton, Trans. N. Y. Acad. Sci. ix. 10 (1889)". Forthwith, as true *H. denticulatum* (originally described "foliis subamplexicaulibus. . . ovatis") there appears in Small, Man. 870 (1933) the plant with "leaf-blades elliptic or nearly so, 1–3 cm. long, acute (oval and relatively shorter, with the sepals oval to ovate, in *H. denticulatum ovalifolium*)".

As a matter of fact, true *H. denticulatum* has the larger round-based leaves only 0.8–2 (rarely –2.5) cm. long and mostly 0.6–1.7 cm. broad, while the reputed but obviously not typical "*H. denticulatum*" has the larger acutish- to acute-based leaves 1.5–3.5 cm. long and 4–10 mm. broad. This plant (our plate 1110), then, stands between short- and broad-leaved true *H. denticulatum* and the extreme with all or at least the upper nearly linear leaves sharply pointed, the upper cauline leaves (the lower ones often broader) 1–3.5 cm. long and only 1.5–7 mm. broad. The latter is *H. denticulatum*, var. *acutifolium* (Ell.) Blake, l. c., based on *H. acutifolium* Ell. Sk. ii. 26 (1821), Elliott's type, × ½, shown in our plate 1111, fig. 2[1]. Had those who have recently pronounced on the identities here involved read Walter's "foliis subamplexicaulibus . . . ovatis" they would not have rendered it as "elliptic or nearly so" and then separated from it as a different variety plants with ovate or oval leaves; and they would not have placed Lamarck's *H. virgatum* (type shown, × ½, in our plate 1111, fig. 1), which was correctly described: "feuilles . . . sessiles, amplexicaules, linéaires-lancéolees, étroites, un peu pointues, entières, . . . les plus grandes, d'environ un pouce sur une largeur de trois à quatre lignes", in the synonymy of the restricted *H. denticulatum*.

[1] The stained paper on which Elliott's type is preserved is due to the long storage, during and after the Civil War, of the herbarium in a damp basement.—See Weatherby in Rhodora, xl. 250 (1942).

At least four numbers of *H. denticulatum*, var. *acutifolium* were distributed by Dr. R. M. Harper without identifications, as nos. 457, 1006, 1028 and 1731, from pinelands of Sumter County, Georgia. Evidently thinking that the labels needed completion, Dr. Robert Keller, who habitually assumed that our eastern North American plants awaited recognition[1], described three numbers as a new species, *H. Harperi* Keller in Engler, Bot. Jahrb. lviii. 198 (1923), he defining Harper's definitely soboliferous, soft-based herbaceous specimens as "suffruticosum, e rhizomate lignoso" and comparing them only with the strictly annual *H. Drummondii* (Grev. & Hook.) T. & G. Had he understood American botanical literature and plants he could have found it already described several times, beginning in 1797. A portion of a cotype (no. 1006)[2] of *H. Harperi* is shown, × 1, in PLATE 1111, FIG. 3. That it belongs with *H. denticulatum*, var. *acutifolium* seems apparent.



Ranges of (1) HYPERICUM DENTICULATUM, var. TYPICUM; (2) var. RECOGNITUM; (3) var. ACUTIFOLIUM.

Although the three varieties may merge and nondescript individuals can be found, while var. *acutifolium* is sometimes associated with the broader- and less attenuate-leaved plant in the southern part of their range, they are generally quite distinct and, as shown in the Gray Herbarium, they have distinctive areas. The maps here published show the localities of all specimens in the Gray Herbarium. They clearly indicate definite centers of development. The three varieties are

HYPERICUM DENTICULATUM Walt., var. **typicum.** *H. denticulatum* Walt. Fl. Carol. 190 (1788). *H. angulosum* Michx. Fl.

[1] See discussion of his new *Polygonum* by Fernald in RHODORA, xlviii. 53 (1946).

[2] Although Keller cited three numbers, he gave the detailed data for only one of them, no. 1028. This we, therefore, designate as the type.

Bor.-Am. ii. 78 (1803). *Brathys denticulata* (Walt.) Spach in Ann. Sci. Nat. sér. 2, v. 367 (1836), wrongly ascribed to Kunth: "B. DENTICULATA Kunth (sub Hyperico)". *B. linoides* Spach, Hist. Nat. Vég. v. 452 (1836), renaming (illegitimate) of *H. angulosum* Michx. *H. virgatum* var. *ovalifolium* Britton in Trans. N. Y. Acad. Sci. ix. 10 (1889). *H. denticulatum*, var. *ovalifolium* (Britton) Blake in RHODORA, xvii. 135 (1915).—Coastal Plain, New Jersey to South Carolina and presumably Georgia; Coffee Co., Tennessee. PLATE 1109. MAP 1.

Var. **recognitum,** var. nov. (TAB. 1110, × 1), foliis anguste ellipticis vel elliptico-oblongis vel anguste obovatis basin versus acutis apice acutis vel obtusis, laminis 1.5–3.5 cm. longis 4–10 mm. latis.—Georgia to Mississippi, northward (mostly in the upland and mountainous areas, barely reaching the inner margin of the Coastal Plain) to southeastern Virginia, southern West Virginia, Kentucky and southern Indiana. TYPE from moist ground, Knoxville, Tennessee, July, 1895, *A. Ruth* in Herb. Gray. MAP. 2.

This variety was taken by Blake and by Small to be typical *H. denticulatum.*

Var. ACUTIFOLIUM (Ell.) Blake, l. c. 134 (1915). *H. virgatum* Lam. Encyc. iv. 158 (1796). *H. acutifolium* Ell. Sk. ii. 26 (1821). *H. virgatum*, var. *acutifolium* (Ell.) Coulter in Bot. Gaz. xi. 106 (1886). *H. Harperi* Keller in Engler, Bot. Jahrb. lviii. 198 (1923).—Rather local, northern Florida, northward on Coastal Plain and upland to North Carolina, southern Virginia and central Tennessee. PLATE 1111. MAP 3.

Var. *acutifolium* is often much taller than the other varieties, large specimens up to 1 m. or more in height, whereas the other two varieties rarely exceed 6.5 dm. in height.

Although Coulter in Gray, Synopt. Fl. N. Am. i[1]. 288 (1897) cites unequivocally as a synonym of *Hypericum virgatum* Lam. the later *H. hedyotifolium* Poir. Suppl. iii. 700 (1813) from Nova Scotia, it is clear that Poiret's species could not have been any form of *H. denticulatum.* Poiret's "Espèce remarquable par sa délicatesse . . . hautes de quatre pouces, . . . les feuilles . . . linéaires, obtuses, droites, longues de quatre lignes, larges d'une ligne . . . ; les fleurs petites; . . . les bractées petites, lancéolées, aiguës: la corolle . . . plus courte que le calice", etc. indicate that he had tiny plants of *H. canadense* L., such as abound in Newfoundland and Nova Scotia.

(*To be continued*)

HYPERICUM DENTICULATUM Walt., var. ACUTIFOLIUM (Ell.) Blake = *H. virgatum* Lam. = *H. acutifolium* Ell. = *H. Harperi* Keller: FIG. 1, portion of TYPE of *H. virgatum*, × ½; FIG. 2, TYPE of *H. acutifolium*, × ca. ½; FIG. 3, portion of COTYPE of *H. Harperi* × 1.

PODOSTEMUM, HIPPURIS AND HOTTONIA IN NEW HAMPSHIRE

A. R. Hodgdon and Stanley B. Krochmal

Podostemum ceratophyllum Michx. During the past two years, collections of this much overlooked species have been made from four streams in different New Hampshire townships. A diligent search in the literature and in herbaria has failed to reveal a solitary record for the species in the state up to now. However, *Podostemum* has been collected from all bordering states as well as the adjacent province of Quebec[1]. In Maine from the central part southward there are at least five known localities; in Massachusetts, at least two are well known; and in Vermont, one.

In recent years there has been an intensification of interest in the aquatic flowering plants of New Hampshire, partly at least, because of the prosecution of the "Waterway Improvement Survey for Waterfowl" by the State Fish & Game Department. In the course of the work, a majority of our streams, ponds and marsh-areas have been investigated systematically and a large number of new stations for some of the less common species have been discovered. Some of these "finds" are reported in this paper along with two stations for *Podostemum* discovered by University of New Hampshire biologists in the course of work quite unrelated to the "Survey".

The first of the *Podostemum* specimens to have been collected was from the township of Lee. Data on label reads: "Bed of Lamprey River between Wadleigh Falls and Long Hill, abundant for one-third of mile in fast water, June 27, 1946, *Hodgdon, Harrington and Jahoda,* No. 5335. Where the plants abounded the water averaged about 1 foot in depth during a moderately dry part of the year. However, plants were found growing on loose

[1] For the general distribution of *Podostemum* in Eastern North America, see Fassett, N. C. Rhodora 41: 525–526, 1939. This is not a complete listing of all known *Podostemum* stations in New England, though specimens from Maine, Massachusetts and Connecticut are cited. The map showing the distribution of *Podostemum* on page 257 in Muenscher's "Aquatic Plants of the United States" Comstock 1944 is incomplete, since it indicates stations in New England only in Maine (one dot) and Massachusetts (one dot). In all fairness to New England collectors we should point out that *Podostemum* has been represented for some time from every state in New England except New Hampshire in the Gray Herbarium and the Herbarium of the New England Botanical Club.

boulders and on apparent bed-rocks surfaces at depth of three to four feet on the same day and in the same general locality. Later on in September, 1946, a much less extensive colony was discovered in the township of Rochester at a swift, rocky place in the Isinglass River. Specimens of this collection, *Hodgdon* No. 5587, and of the Lee material as well are deposited in the Herbarium of the New England Botanical Club and of the University of New Hampshire. During July 1936 one other excursion to the Lamprey River above Wadleigh Falls disclosed *Podostemum* in a swift rocky part of the river on the Lee-Epping boundary. Further collecting at likely places in the major streams flowing into Great Bay should yield other stations.

On July 31, 1947, H. R. Siegler and Ernest Gould of the N. H. Fish & Game Department collected *Podostemum* in North Branch Brook in Antrim and about a week later the junior author and Sumner Dole, working on the "survey", discovered an area of the species in a particularly swift part of Beards' Brook in the township of Hillsborough (*Krochmal* No. 1015). On August 13, Krochmal and Dole visited the Antrim station and obtained excellent fruiting specimens (*Krochmal* No. 1040).

Hippuris vulgaris L. Three new stations in the state for this localized species were discovered during the 1947 season. At the Coös County stations in Pittsburg discovered by the junior author the species occurred in some abundance. Specimens were collected there from Scotts' Bog (*Krochmal* No. 1139). At East Inlet specimens were noted as occurring but none were collected. The other new locality for *Hippuris* is far to the south in Cheshire County—Highland Lake in the township of Stoddard. This was discovered by Ernest Gould. Svenson[1] reported the discovery of *Hippuris* immediately to the north of Stoddard in the township of Washington.

Specimens of *Hippuris* and of *Podostemum* from the stations herein reported, collected by representatives of the State Fish and Game Department, have been presented to the Herbaria of St. Anselm's College and the University of New Hampshire.

Hottonia inflata Ell. The junior author of this paper and Ernest Gould collected *Hottonia* from "Long Pond in Danville-

[1] Rhodora 31: 97, 1929.

Kingston on the 25th of June 1946". The plant was common. This specimen is in the Herbarium of St. Anselm's College. Also in 1946 *Hottonia* was observed, but not collected because its casual nature was not at that time suspected, in the Pow-wow River in Hampton and at Cub Pond in Sandown. Another locality, also in Sandown, New Hampshire, was reported several years ago by the senior author.[1]

University of New Hampshire
St. Anselm's College

A Model Flora of Nova Scotia.—The recently published Flora of Nova Scotia by Professor A. E. Roland[2] is a most welcome addition to the local floras of eastern North America. Provided with practical keys, characteristic drawings of many species and detailed maps of the occurrence in the province of most indigenous species, it is bound to be a much used volume. The introductory pages contain a clear statement of the geological and physiographic background so essential to a proper understanding of the flora, and the maps go outside in order to show the relation of the provincial flora to that of adjacent eastern New Brunswick, Prince Edward Island and the Magdalen Islands. In the statement of local ranges there is evidence that the author has made a canvass of some of the more inclusive herbaria where plants of his region have been assembled, though, from the occasional omission of species enumerated by Macoun as found by him within the province, one wonders if the National Herbarium at Ottawa was checked. Often the old identifications under which plants have been recorded are shown to need correction, a valuable phase of such a work. There is an evident attempt to keep up-to-date on nomenclature and the latest published revisions are often followed, with the result that this is one of the most up-to-date local floras of eastern America. Whether some recent revisions are of equal value with more careful predecessors may, however, be questioned. For instance, the present reviewer can not maintain as a good species the recently described *Suaeda Fernaldii;* this evaluation paralleling Dr. Roland's own decision that the still more recently described *Aster Rolandii* is not worthy recognition!

When a piece of work which has obviously been done with care comes out it may seem to some inappropriate to note points which, in another edition of the book, might be improved. This the present writer does in all friendliness, especially since the greater share of his field-work has been prosecuted in eastern Canada or Newfoundland. In some cases localized species or varieties are taken into the new book and given regular numbers as if they are part of the provincial flora, although in the discussion the author states that they are to be watched for, not that they there occur. To this group belong one of the

[1] Rhodora 46: 143, 1944.

[2] A. E. Roland. *The Flora of Nova Scotia.* Reprinted from Proc. N. S. Inst. Sci. xxi, pt. 3 (1947). Repr. 1948. 552 pp., 127 figs. (each of more than one species) and 477 maps. Truro Printing and Publishing Co., Truro, Nova Scotia.

varieties (by some considered a species) of *Ruppia maritima* "found on the Magdalens and on P. E. I., but not yet in N. S."; *Carex sterilis*, unknown in eastern Canada from south of calcareous marshes of the Magdalens; and *Atriplex sabulosa* Rouy (*A. maritima* E. Haller, not Crantz), a remarkable species, isolated from the region of the Baltic and the North Sea, as are *Polygonum oxyspermum* Meyer & Bunge, which, before the identity was recognized, was supposed to be endemic to the Bras d'Or Lakes (as *P. acadiense* Fern.), and as are *Polygonum Raii* Babington and several other species. The strikingly disjunct range of *Atriplex sabulosa*, known with us only from the coastal sands of the Magdalen Islands, Prince Edward Island and northeastern New Brunswick, was discussed at length and shown in maps on pp. 1503 and 1504 of Proc. Internat. Congr. Pl. Sci. ii (1929). Another case, a little different (because the species is of broad and continuous range), is *Galium labradoricum* "apparently overlooked". This species delights in mediacid to calcareous soils in moss under arbor-vitae and larch and in such habitats in Gaspé and northern Maine it is difficult to overlook because of its clear white inflorescences. So far as we yet know, its southern limit in the Maritime Provinces is on Prince Edward Island and in New Brunswick.

If such plants, actually unknown in Nova Scotia, are to be included, many scores of others which occur on Prince Edward Island or the Magdalens or in adjacent New Brunswick have the same claim as prospective Nova Scotians. A few wide-ranging species, like *Cryptogramma Stelleri*, *Carex vaginata* or *Pilea pumila*, are likely to be found there; but Prince Edward Island, the Magdalens or the recently unglaciated northeastern corner of New Brunswick support a surprising series of isolated "relict" plants or endemics remotely isolated from their closest allies, plants which give these areas floristic individuality. If such distinctive plants as *Potamogeton filiformis* var. *Macounii* Morong (western North America), *Ruppia maritima* var. *brevirostris* Agardh or *R. brachypus* J. Gay (Europe and North Africa), *Montia rivularis* K. C. Gmel. (se. Newfoundland and Europe); *Myriophyllum magdalenense* Fern. (endemic), *Pterospora andromedea* Nutt. (chiefly western American), *Aster laurentianus* Fern. (endemic representative of a western species) and *Bidens heterodoxa* Fern. & St. John (endemic, with vars. in southern Connecticut) and many others are not included as plants we hope sometime to find in Nova Scotia, then *Atriplex sabulosa* (*maritima*) and several others should be excluded[1]. Would it not be better in such cases to note them as desired "prospects", either in smaller type or in brackets? As between Prince Edward Island and Nova Scotia the "wires sometimes get crossed". Thus, *Pyrola asarifolia*, as the text correctly states, occurs from Cape Breton to Kings County, Nova Scotia; but *P. asarifolia*, var. *incarnata*, unknown in Nova Scotia, occurs in Kings County, Prince Edward Island (*Fernald, Long & St. John*, no. 7891).

[1] One is reminded of summers spent on Prince Edward Island, where it was impossible to get away from the current conviction among the untravelled and most conservative residents, that "the Island" is the Dominion of Canada, if not the British Empire; and of a similar local belief about Nova Scotia often met in older residents there. However, not all interesting plants of Prince Edward Island or the Magdalen Islands belong to Nova Scotia.

Yet the map indicates the latter as true *P. asarifolia*, and true *P. asarifolia* (Nova Scotian) as var. *incarnata!* Such things happen to us all.

Another point which may well be altered in a future issue is one which very few botanists seem to understand. This is the citation of so-called *sensu* names, *i. e.* names under which plants have erroneously passed. In the synonymy one too often finds citations like the following, under *Polygonum:* "P. **exertum** Small, including *P. ramosissimum* Michx." The plant of borders of saline marshes in Nova Scotia is *P. exsertum* (described in 1894); whereas *P. ramosissimum* Michx. (described in 1803) is a wholly different and nearly transcontinental species (s. Quebec to Washington and southward). What was obviously meant in the quotation was: *P. ramosissimum* sensu someone or local records, not Michx. As stated, this differentiation between wrongly applied and correctly applied names is too often not made clear. In fact, authors can not be too clear if they wish to avoid misinterpretation. In Rhodora, xv. 68–73 (1913), the present reviewer discussed at some length the several North American plants which have erroneously passed as the quite different European *Polygonum maritimum* but, unfortunately, he did not summarize the conclusions in concrete differentiating paragraphs or keys. The plant on the sands along the coast from Massachusetts southward is *P. glaucum* Nutt.; that on the coast of the Maritime Provinces the very different *P. Raii* Bab.; yet, possibly due to the obscurity of the article cited, the southern *P. glaucum* appears in the new Flora as "a variant of the European *P. maritimum* [which it is not] . . . found along the coast of eastern New Brunswick". The plant of eastern New Brunswick is *P. Raii.*

Happily the author of the new Flora has drawn together many recent records of species not ordinarily recognized as Nova Scotian. Unfortunately, among these is another stoloniferous *Hieracium, H. Auricula* L., which, unless promptly choked off, will add to our aggressive weed-population. In some cases he has found only one collection which can be cited, although others are known, their records perhaps lost in the fire which destroyed his original notes; and, quite understandably, in the going over of large herbaria some species have been missed. These will doubtless be added in a future issue. As a slight contribution toward such an appendix, the following, all (unless noted) before me in the Gray Herbarium, may be listed.

Luzula luzuloides (Lam.) Dandy & Wilmott. Forming mats in a lawn at Pictou, *Fernald & St. John*, no. 10,989. Sterile but with typical base and foliage. A weedy species from Europe, known westward into Ontario and in the northeastern states.

Smilacina stellata (L.) Desf., var. crassa Victorin. A strongly marked thick- and broad-leaved variety following the seacoast from southern Labrador to the lower St. Lawrence, south to Long Island Sound. Dry barren, Trinity Cove, St. Paul Island, *Perry & Roscoe*, no. 149; sand-dunes, West End, Sable Island, *St. John*, no. 1183; dry rocky headlands, Central Port Mouton, *Fernald et al.*, no. 2074 in part.

Rumex persicarioides L. Local in Queens County: moist cobble-beach near mouth of Broad River, *Fernald & Bissell*, no. 21,056; Central Port Mouton, *Fernald et al.*, no. 21,057. Dr. Roland says it "may occur along the North Shore of N. S.". It probably does, but the South Shore won the competition.

Cerastium arvense L., var. viscidulum Gremli. Edge of Granite Cliffs, Trinity Cove, St. Paul Island, *Perry & Roscoe*, no. 203. Only North American station known from east of North Dakota.

Amelanchier intermedia Spach. From Cape Breton to Yarmouth, common. Very many nos.

Rubus arenicola Blanchard. On railroad east of station, Granville, Annapolis Co., August 1, 1909, "very characteristic of this species", *Blanchard*, no. 730.

R. recurvicaulis Blanchard. Very common from St. Paul Island and Cape Breton to Digby, Yarmouth and Shelburne Counties; many numbers collected by Howe & Lang, Blanchard and their successors.

R. trifrons Blanchard. Common from Canso (coll. *Fowler*) to Digby and Yarmouth Counties.

R. trifrons var. pudens (Bailey) Fernald (*R. pudens* Bailey). Louisburg, 1898, *Macoun*, no. 19,072 (as *R. hispidus*); sphagnous swamp, North Sydney, 1901, *Howe & Lang*, no. 684 (as *R. hispidus*).

R. tardatus Blanchard. Common from Hants and Halifax Counties to Yarmouth and Shelburne Counties; many collections from Blanchard and others.

R. multiformis Blanchard. Very common from Kings and Queens Counties westward; many collections by Blanchard and others.

R. vermontanus Blanchard. Common from Annapolis and Digby Counties to Shelburne County.

R. univocus Bailey. Dryish thickets, Sand Beach, Yarmouth Co., *Fernald & Long*, no. 21,544 (as *R. vermontanus*).

R. amicalis Blanchard. Several collections by Blanchard from Kings County to Yarmouth County.

R. alumnus Bailey. Annapolis, June 24, 1924, *J. G. Jack*, no. 3335.

R. glandicaulis Blanchard. Several collections by Blanchard and others from Hants, Annapolis and Shelburne Counties.

Trifolium pratense L. (typical). See Rhodora, xlv. 331 (1943). Scattered collections from St. Paul Island to Yarmouth County, mostly from waste places or neglected fields.

The larger cultivated plant is var. sativum (Mill.) Schreb.

T. hybridum L., var. elegans (Savi) Boiss. See Rhodora, l. c. Weed, Sable Island, *St. John*, no. 1264; roadsides and borders of fields, Yarmouth, *Bissell, Pease, Long & Linder*, no. 21,693.

Melilotus indica (L.) All. Ballast-heaps, Pictou, July 24, 1883, Macoun, no. 65, cited by Macoun (Cat.) as *M. parviflora* Desf.

Epilobium Hornemanni Reichenb. Big Intervale, Cape Breton, July 14, 1898, *Macoun*, no. 19,137.

Fraxinus excelsior L. Escaped to roadsides, railroad-embankments, etc., Pictou, *Fernald & St. John*, no. 11,160; waste ground, railroad-ballast and roadsides, Dartmouth, *Fernald, Bartram, Long & St. John*, no. 24,347; naturalized, Lahave River, Bridgewater, *J. G. Jack*, no. 3518.

Mentha gentilis L. Border of cultivated field, Harper Lake, Shelburne County, *Fernald & Long*, no. 24,431.

Linaria dalmatica (L.) Mill. Fields and roadsides, South Ingonish, *Edith Scamman*, no. 4430.

Digitalis purpurea L. Grassy roadside, Baddeck, *Fernald & Long*, no. 22,431. Macoun, Cat. 360, says "Apparently *naturalized*" on Cape Breton. It is too much so in southwestern Newfoundland.

PLANTAGO MAJOR L., var. SCOPULORUM Fries & Broberg (*P. halophila* Bicknell). See Pilger in Engler, Pflanzenr. iv[269]. 51 and 52, fig. 8 (1937).—A very distinct maritime plant, so distinct as to have been three times separated as a species. Beach, Ingonish, August 5, 1904, *J. R. Churchill;* gravelly shore, Canso, *Rousseau*, no. 35,458; brackish rocky shore of Eel Lake, Belleville, *Fernald & Long*, no. 24,510.

SOLIDAGO TENUIFOLIA Pursh. Perfectly characteristic *S. tenuifolia* from gravelly beach of Feindel's Lake, west of Bridgewater, *Fernald & Long*, no. 24,608; boggy margin of Wile's (Oakhill) Lake, Lunenburg Co., no. 24,609; Harper's Lake, Shelburne County, no. 24,604; Mistake Lake, Digby Co., no. 24,605. Numerous collections from Yarmouth County, making clear transitions to var. *pycnocephala* Fern. = *S. galetorum* (Greene) Friesner (not simply Greene, who published it as *Euthamia galetorum*). Similar transitions are quite apparent on eastern Cape Cod.

GNAPHALIUM MACOUNII Greene (*G. decurrens* Ives, not L.). Since only a single specimen from Windsor is cited, with "no other collection . . . known for the province", it is worth noting two made in 1921: dry clearings, North Mt., Granville, Annapolis County, *Bartram & Long*, no. 24,674; dry clearings and burns near Five-River (Morris) Lake, Shelburne County, *Fernald & Long*, no. 24,675.

ACHILLEA LANULOSA Nutt., a native American species, differs in several characters from the introduced *A. Millefolium* L. In the latter the stems are 3–10 dm. high, either arachnoid or glabrescent. Its corymbs are *flattish-topped* and 0.6–3 dm. broad; its ligules short-oblong. *A. lanulosa* is mostly lower (up to 6 dm. high), densely woolly, the relatively few leaves silky-lanate; the *round-topped or convex corymbs* only 2–10 cm. broad; the ligules narrow and short. It is transcontinental, following south along the coast or in open ground to southern New England. Clearing, St. Paul Island, *Perry & Roscoe*, no. 404; sand-dunes, Sable Island, *St. John*, no. 1346; roadside in dry soil, Windsor Junction, *Howe & Lang*, no. 434; low sand-dunes, Central Port Mouton, *Graves, Long & Linder*, no. 22,884; sand-hills, Villagedale, *Fernald, Long & Linder*, no. 22,883.

This brief enumeration of additions to the recorded flora indicates that there is plenty yet to do for the alert field-botanist. If species quite clear to those who have long known their diagnostic characters, *Scirpus acutus* and *S. validus*, for example, were included, the new list would be longer. If the collections made by John Macoun and often recorded by him were checked a considerable addition both of species and localities would follow. On page 169 of the Ottawa Naturalist, xiii. (1899) the late J. M. Macoun recorded his father's two localities for *Carex Crawei* Dewey on Cape Breton, a species with which John Macoun was perfectly familiar. A citation on the same page of *Scirpus rufus* from Cape Breton (*Macoun* in 1898) would give the earliest record for the province. All of which sums up to the conclusion that there is still much to be done in carefully checking old collections. There is more to do in making new discoveries. The present writer and his companions thought it a poor day if they did not bring in two to several species new to the province; Mr. Weatherby, venturing into slightly different areas, has made extraordinary additions and other plants are waiting discovery. The new and very useful Flora should stimulate new exploration. The reviewer regrets that he can not join in it.—M. L. F.

The Name Taraxacum Officinale.—In Castanea, xii. 61, 62 (1947) Dr. F. R. Fosberg, citing my taking up of the name *Taraxacum officinale* Weber, concludes: "Why he uses the later *Taraxacum officinale* rather than *T. vulgare* is not clear". Since others have asked the same question, a word of explanation may help them: the name *T. vulgare* (Lam.) Schrank (1792), based on *Leontodon vulgaris* Lam. Fl. Fr. ii. 113 (1778), is illegitimate under the International Rules. Lamarck's name was a substitute for *Leontodon Taraxacum* L.:

"Pissenlit commun. *Leontodon vulgare.*

Leontodon taraxacum Lin. Sp. 1122."

As said, by the International Rules such mere substitute-names are ruled out and cannot be taken up under another generic name if, at the date of transfer, there already existed a legitimate epithet of its own rank. When the combination *Taraxacum vulgare* (Lam.) Schrank (1792) was published there already existed the legitimate name *Taraxacum officinale* Weber (1780). Therefore, *T. officinale* is the correct name, unless someone turns up one which is earlier. Since this working of an important rule is not understood by many botanists this brief statement may be clarifying.—M. L. Fernald.

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